

**AMENDMENTS TO THE CLAIMS**

1-19 (Canceled)

20. (Previously Presented) A method for imaging a scene, comprising the steps of  
irradiating a scene from a plurality of angular positions,  
detecting radiation transmitted through the scene at a plurality of different spatial  
resolutions corresponding to the plurality of angular positions;  
producing two-dimensional transmission data representative of the intensity of the  
radiation transmitted through the scene at each of the plurality of angular positions; and  
producing a three-dimensional image of the scene based on said two-dimensional  
transmission data.

21. (Original) The method of claim 20, wherein the step of irradiating the scene further  
comprises the step of irradiating the scene using x-ray radiation.

22. (Original) The method of claim 21, wherein the step of irradiating the scene further  
comprises the step of irradiating the scene using a total radiation dose which is less than or  
approximately equal to a dose of a standard screening mammogram.

23. (Original) The method of claim 22, wherein said standard dose is approximately 80  
mrad per image.

24. (Original) The method of claim 20, wherein the plurality of angular positions forms an  
arc about the scene.

25. (Original) The method of claim 24, wherein the arc spans a plane and has an axis of  
rotation on a line in the plane that is perpendicular to the scene and that extends through  
approximately the center of the scene.

26. (Original) The method of claim 20, wherein the step of irradiating the scene further  
comprises the step of varying the angular spacing between the plurality of angular positions.

27. (Original) The method of claim 20, wherein the scene is a three-dimensional scene and wherein the step of producing radiation transmission data further comprises the steps of:  
producing high resolution radiation transmission data for two dimensions of the scene; and  
producing low resolution radiation transmission data for a third dimension of the scene.

28 - 34. (Canceled)

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Currently Amended) ~~The A method of claim 35~~ imaging an object, comprising the steps of:

irradiating the object from a plurality of non-uniformly distributed angular positions;  
detecting radiation transmitted through the object for each of said angular positions to  
create two-dimensional transmission data; and

constructing a three-dimensional image of the object by analyzing said radiation  
transmission data;

wherein the step of irradiating includes irradiating the object with a first radiation dose at one angular position of the source and irradiating the object with a second radiation dose at another angular position, said second radiation dose being different from said first radiation dose.

39. (Canceled)

40. (Currently Amended) ~~The A method of claim 37~~ imaging an object, comprising the steps of:

irradiating the object from a plurality of non-uniformly distributed angular positions,  
detecting radiation transmitted through the object for each of said angular positions to  
create two-dimensional transmission data; and

constructing a three-dimensional image of the object by analyzing said radiation transmission data;

wherein the step of irradiating the object comprises selecting a sufficiently low dose of radiation for each angular irradiation such that a total dose of radiation per three-dimensional image is approximately 80 mrad.

41. (Currently Amended) ~~The~~ A method of ~~claim 39~~ imaging an object, the method comprising the steps of:

irradiating the object multiple times, each irradiation being performed at a position angularly displaced from a previous irradiation position, said angular positions being non-uniformly distributed about the object;

detecting radiation transmitted through the object at each of said angular positions to create two-dimensional radiation transmission data; and

constructing a three dimensional image of the object by analyzing said transmission data;

wherein the step of irradiating the object comprises selecting each irradiation dose to be sufficiently low such that total dose of radiation per three-dimensional image is approximately 80 mrad.

42. (Previously Presented) A method of imaging an object, comprising the steps of:  
irradiating the object from a plurality of non-uniformly distributed angular positions,  
detecting radiation transmitted through the object for each of said angular positions at a different spatial resolution to create a two-dimensional radiation transmission data; and  
constructing a three-dimensional image of the object by analyzing said transmission data.

43. (Previously Presented) A method of imaging an object, the method comprising the steps of:

irradiating the object multiple times, each irradiation being performed at a position angularly displaced from a previous irradiation position, said angular positions being non-uniformly distributed about the object;

detecting radiation transmitted through the object at each of said angular positions at a different spatial resolution to create a two-dimensional radiation transmission data; and

constructing a three-dimensional image of the object by analyzing said radiation transmission data.